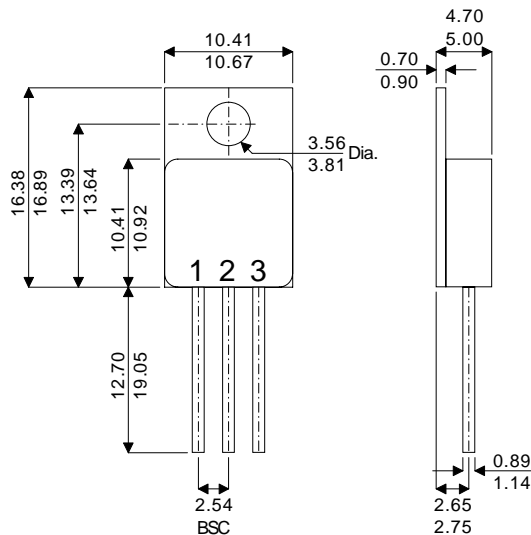


**MECHANICAL DATA**

Dimensions in mm (inches)



**TO-220M – Metal Package**

Pad 1 – Gate      Pad 2 – Drain      Pad 3 – Source

**P-CHANNEL  
POWER MOSFET  
FOR HI-REL  
APPLICATIONS**

$V_{DSS}$             **-100V**  
 $I_{D(cont)}$         **-9.3A**  
 $R_{DS(on)}$         **0.31Ω**

**FEATURES**

- HERMETICALLY SEALED TO-220 METAL PACKAGE
- SIMPLE DRIVE REQUIREMENTS
- LIGHTWEIGHT
- SCREENING OPTIONS AVAILABLE
- ALL LEADS ISOLATED FROM CASE

**ABSOLUTE MAXIMUM RATINGS** ( $T_{case} = 25^{\circ}C$  unless otherwise stated)

$V_{GS}$	Gate – Source Voltage	±20V
$I_D$	Continuous Drain Current @ $T_{case} = 25^{\circ}C$	-9.3A
$I_D$	Continuous Drain Current @ $T_{case} = 100^{\circ}C$	-5.8A
$I_{DM}$	Pulsed Drain Current	-37A
$P_D$	Power Dissipation @ $T_{case} = 25^{\circ}C$	45W
	Linear Derating Factor	0.36W/°C
$T_J, T_{stg}$	Operating and Storage Temperature Range	-55 to 150°C
$R_{\theta JC}$	Thermal Resistance Junction to Case	2.8°C/W max.
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	80°C/W max.

**ELECTRICAL CHARACTERISTICS** ( $T_C = 25^\circ\text{C}$  unless otherwise stated)

Parameter	Test Conditions	Min.	Typ.	Max.	Unit	
<b>STATIC ELECTRICAL RATINGS</b>						
$BV_{DSS}$	Drain – Source Breakdown Voltage	$V_{GS} = 0$	$I_D = 1\text{mA}$	-100	V	
$\frac{\Delta BV_{DSS}}{\Delta T_J}$	Temperature Coefficient of Breakdown Voltage	Reference to $25^\circ\text{C}$ $I_D = 1\text{mA}$		-0.1	$\text{V}/^\circ\text{C}$	
$R_{DS(on)}$	Static Drain – Source On–State Resistance	$V_{GS} = 10\text{V}$	$I_D = -5.8\text{A}$		0.31	
		$V_{GS} = 10\text{V}$	$I_D = -9.3\text{A}$		0.36	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}$	$I_D = 250\mu\text{A}$	-2	-4	V
$g_{fs}$	Forward Transconductance	$V_{DS} \geq 15\text{V}$	$I_{DS} = -5.8\text{A}$	2.5		$\text{S}(\bar{v})$
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{GS} = 0$	$V_{DS} = 0.8BV_{DSS}$		-25	$\mu\text{A}$
			$T_J = 125^\circ\text{C}$			-250
$I_{GSS}$	Forward Gate – Source Leakage	$V_{GS} = 20\text{V}$			-100	nA
$I_{GSS}$	Reverse Gate – Source Leakage	$V_{GS} = -20\text{V}$			100	nA
<b>DYNAMIC CHARACTERISTICS</b>						
$C_{iss}$	Input Capacitance	$V_{GS} = 0$			800	pF
$C_{oss}$	Output Capacitance	$V_{DS} = 25\text{V}$			350	
$C_{riss}$	Reverse Transfer Capacitance	$f = 1\text{MHz}$			125	
$Q_g$	Total Gate Charge	$V_{GS} = 10\text{V}$	$I_D = -9.3\text{A}$	14.7	30	nC
		$V_{DS} = 0.5BV_{DSS}$				
$Q_{gs}$	Gate – Source Charge	$I_D = -9.3\text{A}$		1	7.1	nC
$Q_{gd}$	Gate – Drain (“Miller”) Charge	$V_{DS} = 0.5BV_{DSS}$		2	21	
$t_{d(on)}$	Turn–On Delay Time	$V_{DD} = -50\text{V}$ $I_D = -9.3\text{A}$ $R_G = 7.5\Omega$			60	ns
$t_r$	Rise Time				140	
$t_{d(off)}$	Turn–Off Delay Time				140	
$t_f$	Fall Time				140	
<b>SOURCE – DRAIN DIODE CHARACTERISTICS</b>						
$I_S$	Continuous Source Current				-9.3	A
$I_{SM}$	Pulse Source Current				-37	
$V_{SD}$	Diode Forward Voltage	$I_S = -9.3\text{A}$	$T_J = 25^\circ\text{C}$		-4.7	V
		$V_{GS} = 0$				
$t_{rr}$	Reverse Recovery Time	$I_S = -9.3\text{A}$	$T_J = 25^\circ\text{C}$		250	ns
$Q_{rr}$	Reverse Recovery Charge	$d_i / d_t \leq 100\text{A}/\mu\text{s}$		$V_{DD} \leq 50\text{V}$	3	$\mu\text{C}$
<b>PACKAGE CHARACTERISTICS</b>						
$L_D$	Internal Drain Inductance	(from 6mm down drain lead pad to centre of die)			8.7	nH
$L_S$	Internal Source Inductance	(from 6mm down source lead to centre of source bond pad)			8.7	